



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

ac

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/963,463	09/27/2001	Naoya Nakanishi	NOK-010	9557
20374	7590	02/17/2004	EXAMINER	
KUBOVCIK & KUBOVCIK SUITE 710 900 17TH STREET NW WASHINGTON, DC 20006			DOVE, TRACY MAE	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 02/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/963,463

Applicant(s)

NAKANISHI ET AL.

Examiner

Tracy Dove

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/29/03</u> . | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1745

DETAILED ACTION***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on 12/29/03 has been considered by the examiner.

Claims Analysis

Claim 1 recites "a lithium-nickel-cobalt-manganese composite oxide represented by the formula $\text{LiNi}_{(1-x-y)}\text{Co}_x\text{Mn}_y\text{O}_2$ where $0.5 < x+y < 1.0$ and $0.1 < y < 0.6$ ". However, it is possible for "x" to be zero in which case the active material would not comprise a lithium-nickel-cobalt-manganese composite oxide. Thus, claim 1 will be interpreted such that "x" is greater than zero while satisfying the limitation " $0.5 < x+y < 1.0$ ". Specifically, the claim recitation "lithium-nickel-cobalt-manganese composite oxide" indicates that cobalt is present.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Numata et al., WO 00/13250.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Numata et al., EP 1 117 145 A1.

Note WO 00/13250 is a Japanese language document. EP 1 117 145 is an English language equivalent of WO 00/13250 as represented by the Derwent printout that shows the two

documents are members of the same patent family (printout attached). Thus, the European patent will be used to discuss the teachings of both WO 00/13250 and EP 1 117 145.

Numata teaches a nonaqueous electrolyte solution secondary battery comprising a positive electrode active material including (A) a lithium manganese composite oxide and (B1) at least one lithium-nickel composite oxide. The lithium-nickel composite oxide may be represented by the formula $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$ wherein $0 < x \leq 0.5$ and M is at least one metal element selected from a group consisting of Co, Mn, Al, Fe, Cu and Sr (see abstract). As the lithium manganese composite oxide, LiMn_2O_4 having a spinel structure is preferable (page 6, lines 19-24). In the lithium-nickel composite oxide represented by the formula $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$, M may be two or more dope metal elements as long as the sum of the composition ratios of the dope metal elements is x (page 7, lines 33-40). Cobalt is a preferred dope metal (page 7, line 41). Numata teaches in the lithium-nickel composite oxide represented by the formula $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$, M may be two dope metals Co and Mn (page 19, lines 36-41).

Regarding claim 2, the weight ratio between the [lithium-manganese composite oxide]:[lithium-nickel composite oxide] equals $(100-a):a$, wherein a is preferably $3 \leq a \leq 45$ (page 5, lines 20-21).

Regarding claim 3, the particle diameter of the lithium-manganese composite oxide is 5-30 μm as a weight average particle diameter (page 6, lines 25-27). The lithium-nickel composite oxide has a particle diameter of not more than 40 μm and not less than 1 μm (page 7, lines 50-55).

Numata does not explicitly teach that the sum of the composition ratios of the dope metal elements "x" may be greater than 0.5 (as required by the claimed invention).

Art Unit: 1745

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (Court held as proper a rejection of a claim directed to an alloy of “having 0.8% nickel, 0.3% molybdenum, up to 0.1% iron, balance titanium” as obvious over a reference disclosing alloys of 0.75% nickel, 0.25% molybdenum, balance titanium and 0.94% nickel, 0.31% molybdenum, balance titanium.) See MPEP 2144.05. A skilled artisan would have expected $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$ having a total dopant composition ratio “x” slightly above 0.5 to have the same properties of $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$ having a total dopant composition ratio “x” of $0 < x \leq 0.5$ where the dopant elements consist of cobalt and manganese.

Response to Arguments

Applicant's arguments filed 11/17/03 have been fully considered but they are not persuasive.

Applicant argues the nonaqueous electrolyte cell of the claimed invention in which the positive electrode active substance comprises the lithium-nickel-cobalt-manganese composite oxide of the instant claims has materially improved power characteristics relative to the prior art as represented by Numata. However, evidence of unexpected results has not been provided to distinguish the claimed invention of the prior art of record. Applicant further argues the amount of nickel is outside the scope of the amount of nickel of the present claims. However, an anticipation rejection has not be made to reject the claims in view of the prior art. Applicant

Art Unit: 1745

asserts the power characteristics of the cell of the present claims cannot be reasonably predicted from the prior art and points to Tables 6-8 of the present specification as support.

Regarding Tables 6-8, Applicant refers to invention cell 4 and comparative cell 2 (Table 6) to show that amounts of nickel smaller than 0.5 specifically exhibit improved power characteristics. However, this correlation does not hold when comparing invention cell 4 and comparative cell 1 that have the same proportion of nickel (0.4), but significantly different power density values. Thus, the amount of nickel of the instant invention does not result in improved power characteristics over the prior art of record. Also note comparative cell 4 that has 0.2 proportion of nickel and an undesirable power density characteristic.

Examiner points out that Tables 6-8 cannot be used to show unexpected results over the prior art of record because both the present claims and the prior art of record have two components of the positive active material that contribute to the power characteristics of the cell. The present specification states that invention cells 0-12 were fabricated using lithium-nickel-cobalt-manganese oxides of different compositions (page 9). Thus, Tables 6-8 do not show power density results for cells containing positive active materials having both the lithium-nickel-cobalt-manganese oxide and the lithium-manganese oxide of the claimed invention. Unexpected results must distinguish the claimed invention over the prior art of record. In order to show evidence of unexpected results, Applicant must distinguish the cell of the claimed invention over the cell of the prior art (Numata).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 1745

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is (571) 272-1285. The Examiner may normally be reached Monday-Thursday (9:00 AM-7:30 PM). My supervisor is Pat Ryan, who can be reached at (571) 272-1292 and the official fax number is 703-872-9306.

February 3, 2004


Patrick Ryan
Supervisory Patent Examiner
Technology Center 1700